first block of buildings of the British Museum extension. The scheme of the extension was initiated twelve years ago, when, in 1895, the opportunity presented itself for acquiring from the trustees of the Duke of Bedford's estate the property immediately surrounding the north, east, and west sides of the museum. At that time your Majesty was a trustee of the British Museum, and your Majesty was pleased to take a great personal interest in the negotiations which resulted in securing the property for the purpose of the future enlargement of this great national institution. This property consisted of the sixty-nine houses forming the western side of Montague Street, the southern side of Montague Place (the site on which this present building is being erected), and the eastern side of Bedford Square and Bloomsbury Street, and covering, with their gardens, an area of 5½ acres. The acquisition of this property, added to the existing museum premises, put the trustees in possession of a four-square area of 13 acres, which, when the scheme of the extension shall be fully carried out, will be covered by the galleries of the completed British Museum of the future. In the negotiations for the acquisition of this property the trustees of the Duke of Bedford's estate met the proposals of the trustees of the British Museum in a most liberal spirit; and the purchase was effected without difficulty for the sum of 200,000*l*., provided by her late Majesty's Government, the Chancellor of the Exchequer then being the late Sir William Vernon Harcourt, himself an elected trustee of the British Museum, who, both on this occasion and on others, manifested his interest in the welfare of the museum by advocating liberal treatment at the hands of the Lords of the Treasury. Five years afterwards, under the will of Mr. Vincent Stuckey Lean, who bequeathed to the trustees of the British Museum the sum of 50,000*l*., "to appropriate at their discretion to the extension and improvement of the library and reading-room," the trustees received the sum of 45,000*l*., being the amount bequeathed, less duty. With this sum in their hands, the trustees again approached the Lords of the Treasury and submitted a scheme for erecting the galleries, of which your Majesty is about to lay the foundation-stone, on the site of the houses forming the south side of Montague Place. There were two reasons suggesting the choice of this site. In the first place, the date of the expiration of the leases of the houses was approaching; and, next, the ground on the north side of the British Museum and contiguous to the library was that which could be most conveniently utilised for complying with the wish of Mr. Lean and devoting his bequest "to the extension and improvement of the library and reading-room." The Lords of the Treasury were pleased to give favourable consideration to the trustees' proposal, with the result that, for the purposes of the new building, the sum of 150,000*l*. was scheduled in the Public Buildings Expenses Act of 1903, in augmentation of the 45,000*l*. which passed to the trustees under the Lean bequest.

In the course of his reply to the address, the King said that during the many years that he was a trustee he took the greatest interest in the scheme for extending the Museum, and he was glad that it had been found possible to acquire sufficient adjoining property to allow of a further extension of the buildings in the future.

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## NOTES.

SIR JOSEPH D. HOOKER, G.C.S.I., F.R.S., celebrated his ninetieth birthday on Sunday, June 30, and received the sincere congratulations of many friends. We are delighted to see that the King marked the occasion by appointing Sir Joseph Hooker to the Order of Merit.

THE long list of honours announced on the occasion of the King's birthday includes the names of a few men of scientific eminence. Prof. E. Ray Lankester, F.R.S., has been appointed a Knight Commander of the Order of the Bath, and Dr. J. A. Ewing, F.R.S., has been appointed a Companion of the same Order. Among the four new peers is Sir James Blyth, Bart., who has rendered signal service to agricultural science, and has placed two farms at the disposal of the Government for the purposes of the investigations undertaken by the Royal Commission on Tuberculosis. With the thirty-one names of new knights are those of Prof. John Rhys, professor of Celtic at Oxford; Dr. J. Donaldson, principal of the University of St. Andrews; Mr. J. Gavey, C.B., engineer-in-chief to the Post Office; and Dr. H. R. Swanzy, president of the Royal College of Surgeons in Ireland, and formerly president of the Ophthalmological Society of the United Kingdom. Sir William MacGregor, K.C.M.G., has been promoted to the rank of G.C.M.G., and Colonel W. G. Morris, C.B., C.M.G., has been promoted to the rank of K.C.M.G. for services as superintendent of the trigonometrical survey of the Transvaal and Orange River Colonies.

MR. W. P. PYCRAFT has been appointed by the principal trustees an assistant on the permanent staff of the zoological department of the British Museum.

THE Anthropological Institute has received the King's permission to change its title to that of the Royal Anthropological Institute of Great Britain and Ireland, by which name it will henceforth be known.

SOON after 9 a.m. on June 26 Holyhead and other places in the western part of the Isle of Anglesea experienced an earthquake shock which greatly alarmed the inhabitants, and in some instances threw down pictures and crockery. The shock was accompanied by a noise like thunder, which lasted about twenty seconds. The vibration is stated to have come from the north-east.

THE council of the Royal Society of Edinburgh has awarded the Keith prize for the biennial period 1903–5 to Dr. Thomas H. Bryce for his two papers on "The Histology of the Blood of the Larva of *Lepidosiren paradoxa*," published in the Transactions of the society; and the Makdougall-Brisbane prize for the biennial period 1904–6 to Dr. Jacob E. Halm for his two papers on "Spectroscopic Observations of the Rotation of the Sun" and "Some further Results obtained with the Spectroheliometer," and for other astronomical and mathematical papers published in the Transactions and Proceedings of the society.

THE Lord Mayor presided over a meeting convened by the Bread and Food Reform League at the Mansion House on June 26. This league is organised to direct attention to the great importance of the food question, to promote the healthy nutrition of the people, and to diminish many of the diseases produced by ignorance of dietetic laws. Without advocating any special system of diet, it is desired to show the nutritive and economic importance of many neglected foods of staple value. It is believed that proper knowledge of the food value of various diets will promote health and temperance, and diminish the fearful infant mortality that exists at the present time. The meeting was addressed by the Lord Mayor, Miss May Yates (the hon. secretary of the league), Sir James Crichton-Browne, Dr. Heron, Dr. J. F. Sykes, Mr. Mayo Robson, and others.

IN reply to a question asked in the House of Commons on Monday, Mr. Haldane stated that the names of the members of Lord Rayleigh's committee now considering questions arising out of defective cordite are as follows:—

Lord Rayleigh, F.R.S., Sir J. Dewar, F.R.S., Sir A. Noble, Bart., F.R.S., Sir W. Crookes, F.R.S., Dr. J. A. Ewing, F.R.S., Dr. A. Dupré, F.R.S.—absent through illness; Major-General D. D. T. O'Callaghan, president, Ordnance Committee; Rear-Admiral R. F. O. Foote, vice-president, Ordnance Committee; Lieut.-Colonel Sir F. L. Nathan, superintendent, Royal Gunpowder Factory; Captain B. H. Chevallier, assistant to Director Naval Ordnance; Captain J. H. Thomson and Major A. McN. C. Cooper Key, H.M. Inspectors of Explosives, Home Office; and Mr. R. Robertson, superintendent in Chemist Research Department.

THE New Zealand Government is about to undertake extensive trawling of an experimental nature. Mr. L. F. Ayson, Chief Inspector of Fisheries, will be in charge, and Mr. Edgar R. Waite, curator of the Canterbury Museum, Christchurch, has been appointed zoologist to the expedition. Collections will be made of all marine products, which will be investigated, so far as possible, by New Zealand naturalists, and the material obtained will be the property of the Canterbury Museum. The committee for biological and hydrographical study of the New Zealand coast, appointed by the Australasian Association for Advancement of Science, will provide certain equipment for use in the deeper waters. The *Nora Nevin*, a new steam trawler just from the stocks at Grimsby, England, built to the order of the Napier (N.Z.) Fish Supply Co., has been chartered by the New Zealand Government, and it is anticipated that operations will extend over a period of three months.

THE annual general meeting of the Society of Arts, the 153rd since the foundation of the society, was held on June 26, Sir Steuart Colvin Bayley, K.C.S.I., C.I.E., chairman of the council, being in the chair. The Prince of Wales was re-elected president of the society, an office which he has filled since 1901. It was announced that a committee has been appointed to make further investigation into the subject of the deterioration of paper, on which subject a committee reported in 1898. The council of the society is prepared to award, under the Fothergill trust, a gold medal, or a prize of 20*l.*, for the best portable apparatus or appliance for enabling men to undertake rescue work in mines or other places where the air is noxious. Inventors intending to compete should send in a notice of their intention, together with a full description of their inventions, not later than March 31, 1908, to the secretary of the Society of Arts, John Street, Adelphi, London, W.C.

WE regret to see the announcement of the death, on June 28, at the age of eighty-two, of Sir William T. Gairdner, K.C.B., F.R.S., formerly professor of medicine in the University of Glasgow. Sir William Gairdner graduated as M.D. at the University of Edinburgh in 1845. He made numerous contributions to the science of medicine, more especially in the departments of pathology, public health and hygiene, and clinical medicine. He was recognised as one of the foremost physicians of his time, and his status in the medical profession is indicated by the fact that he was president of the British Medical Association in 1888. For several years he acted as the first medical officer of health for the City of Glasgow, and the measures he then initiated for securing the health of the community soon materially lowered the death-rate of the city, and have been adopted largely at home and abroad. Sir William Gairdner was appointed K.C.B. in 1889, and was elected a Fellow of the Royal Society in 1893. Among other distinctions, he received the degree of LL.D. Edin. in 1883, and that of M.D. Dublin (*honoris causa*), with the honorary Fellowship of the Royal College of Physicians of Ireland, in 1887. His principal works were "Clinical Medicine," 1862; "Public Health in Relation to Air and Water," 1862; "On some Modern Aspects of Insanity," "Lectures to Practitioners" (jointly with Dr. J. Coats), 1888; "The Physician as a Naturalist," 1888; and many papers in medical journals and in the transactions of pathological and medical societies.

THE death of Dr. Carl Braun, S.J., which we regret to have to announce, recalls the earnest efforts that Hungary has made of late years to assume a more prominent position in astronomical science. The late Archbishop of Kalocsa, who provided and equipped the observatory of that town, placed it under the charge of Dr. Braun, and here he worked indefatigably in those preliminary matters which are so necessary in a young institution. He mounted the instruments, determined the position of the observatory, and decided the course of future observation, which under Father Fenyi has been productive of such fruitful results. As a pupil of Secchi, he naturally turned to spectroscopic observation of the sun, and in this department the work of the observatory is well known. Such questions as the density of the earth also occupied him, and in the later years of his life he contributed papers on cosmogony. Indeed, his activity ranged over many subjects, and though he suffered much in the later years of his life, his colleagues speak of his untiring industry and continued perseverance. Dr. Braun was possessed of great mechanical ingenuity. This was manifested in the construction of, or rather suggestion for, a form of transit micrometer that reduced personal equation to a minimum, and of a plan for photographing the sun by monochromatic light, forestalling by many years the work of Hale and Deslandres.

THE annual meeting of the general committee of the Imperial Cancer Research Fund was held on Monday at Marlborough House, the Prince of Wales presiding. In moving the adoption of the report, Sir William Church said:—Our knowledge of the existence and frequency of cancer in various races of men is steadily increasing, and evidence is accumulating that its presence is not infrequently associated with native customs or religious rites which act as sources of chronic irritation of portions of the surface of the body and appear to determine the character and position of the cancerous growths most commonly met with. The information we have received lends no support to the view that cancer is associated with any particular kind of diet; populations living on a purely vegetable diet are apparently as subject to it as those whose food is of a mixed character. Resort to experiment must be had in order to trace more accurately the circumstances associated with the spontaneous occurrence of cancer both in individuals and in families. The removal by surgical means of cancerous tumours occurring spontaneously in mice prolongs their lives and has enabled us to breed from them; we have, therefore, now the means of observing descendants of mice of known cancerous parentage, and by successively crossing other spontaneously affected animals with the offspring of cancerous parents, we can concentrate the hereditary tendency, if it exists. This concentration in large numbers of animals of a known age and in a known amount should enable us, in the course of a few years, to determine whether there is a family or only an individual tendency to the disease. Other experimental investigations have been carried on; in former years we endeavoured by experiment to find out the essential features of cancer; during the past year we have been engaged in studying special problems, and more especially the relations of cancer-cells to those of the organism in which they occur. Considerable attention has been paid during the past year to the alleged cures for cancer which have come before us. I regret to say that it is impossible to ascribe a curative value to any of them. A further series of experiments with trypsin alone, or in conjunction with amylopsin or as pancreatic extract, have been made, and it appears in mice to exert no effect on the growth or development of the tumours.

WE have received from Mr. Quaritch, of Grafton Street, a copy of the third part of a catalogue of rare and valuable works on natural history. The contents include works on various groups of invertebrates, on palæontology and geology, and on general biological subjects.

SUPPLEMENTAL notes on the mammals and a list of the myriopods of the Forth or Edinburgh area constitute the contents of No. 8 of vol. xvi. of the Proceedings of the Royal Physical Society of Edinburgh, both papers being by Mr. W. Evans. The additions to the mammal list include a bat and the Greenland, or harp, seal, a specimen of the latter having been taken in March, 1903, in the upper estuary of the Forth.

WE have received copies of Nos. 1530–6 of the Proceedings of the U.S. National Museum. Among these, reference may be made to reviews of the loaches and sticklebacks of eastern Asia, by Mr. L. Berg (Nos. 1533, 1536), in which it is shown that *Misgurnus fossilis* (loach) and *Cobitis taenia* of the British Isles are represented by specifically identical forms in the Amur. The description of a new genus (Spherarmadillo) of terrestrial isopod crustaceans from Guatemala, by Miss H. Richardson (No. 1535), is also a matter of considerable interest.

IN his report for 1906, the director of the Field Museum of Natural History, Chicago (the new title of the Field Columbian Museum), has to deplore the death of its founder, Mr. Marshall Field, which took place during the year under review. Mr. Field, although he held no official post in connection with it, was a constant visitor to the museum, where his commendation was always regarded by the officers as a high honour. In all departments the museum appears to be making steady progress, several new acquisitions and exhibits being illustrated in the report. Among the former, attention is directed to a series of meteorites from a recent fall in Kansas, and to a large number of vertebrate remains from the Loup Fork beds of Nebraska and Wyoming.

IN connection with the preceding paragraph, reference may be made to the valuable series of catalogues of mammals compiled by Dr. D. G. Elliot, honorary curator of the zoological department of the Field Museum, Chicago, and published by the museum. While the previous volumes deal with the mammalian faunas of America, the one now before us is a catalogue of the specimens of mammals from all parts of the world in the collection of the Field Museum. Although simply a catalogue, with references to original descriptions, the volume contains a number of excellent illustrations of striking types of mammals, many of which students familiar with the subject will recognise as reproductions from well-known figures. The collection of mammals in the museum, now comprising about 15,000 specimens, has been mainly brought together by the energy of Dr. Elliot, and every specimen, with its full history, is catalogued in the present volume. Whether Dr. Elliot's views or nomenclature be generally accepted in their entirety or no, the work cannot fail to be of great value to naturalists, and the entire series of catalogues forms a monument to the untiring and ceaseless industry and perseverance of the author.

IN the Scientific Memoirs of the Government of India, No. 27, Captain Patton, M.B., I.M.S., records the frequent occurrence of the Leishman-Donovan body in the peripheral circulation in cases of kala-azar in Madras, the parasite being seen in the leucocytes but not in the red blood cells or free in the plasma. In certain cases of the disease accompanied with extensive ulceration of the large intestine, the polymorphonuclear leucocytes are increased in number, and many of these cells contain the parasite. The parasite was recovered from certain lice allowed to bite patients, but not from several mosquitoes nor from a tick. In the Indian bed-bug (*Cimex macrocephalus*) the parasite was found in considerable numbers, and all stages of development, from the round body to fully developed flagellates, were observed. In Memoir No. 28, Captain Christophers, M.B., I.M.S., describes the sexual cycle of development of the hæmogregarine parasite of the dog, the *Leucocytozoon canis*, in the tick, *R. sanguineus*. Soon after the tick has ingested blood containing the parasites, free vermicules appear; some of these become embedded in the protoplasm of the gut cells and become stouter and more bulky. The bulky forms undergo fission into two, four, or even eight vermicules, some of which are large and sexually mature, conjugate, and form oocysts. The protoplasm of the oocyst then divides into sporozoits, but the means by which these reach and infect the dog have not been made out, as they have not been found in the ova of the tick.

A BOTANICAL exploration of the north-western portion of the county of Limerick, comprising the barony of Shanid, undertaken by Messrs. M. C. Knowles and C. G. O'Brien, has yielded several interesting plants and added many new species to the flora of the district. An account of their collections appears in the *Irish Naturalist* (June). Two notable discoveries were the grasses *Glyceria Foucaudi* and *Glyceria Festucaeformis*. A variety of *Rosa stylosa* was found in apparently native surroundings, and the same opinion is expressed with regard to the habitat of *Epilobium angustifolium*.

ON the reproduction of trees from seedlings, a problem that offers peculiar difficulties to foresters in a hot, dry climate, several articles appear in the *Indian Forester* (April). The requirements of "sal" seedlings, *Shorea robusta*, with regard to soil, protection from frost and light are discussed by Mr. W. H. Lovegrove and Mr. E. M. Coventry, and Mr. L. S. Osmaston refers to experiments in connection with artificial methods for raising young trees. The discovery noted by Mr. E. P. Stebbing of the coccid *Lecanium capreae* on almond trees in Baluchistan provides the first record for India. A useful summary, by Dr. E. Nesbit, of Indian trees providing timber suitable for export is concluded in this number of the journal.

ON the subject of the interrelation between the phases of the moon and the cutting of bamboos and other material, a correspondent writes to say that in Mexico and other American countries the belief is commonly and strongly held that material should be cut when the moon is waning if durability is desired. The statement is advanced on the evidence of an American ranchman, who offers the explanation that at the time of the full moon the bamboos are full of sap, and that the sap rises and falls with the waxing and waning of the moon. As mentioned in a paragraph in NATURE of February 14 (p. 377), Mr. E. P. Stebbing has met with the same belief in India, and refers to experiments made in southern India, but these were inconclusive. Seeing how widely the conviction is spread through the tropics, it would be interesting to obtain more evidence, but such evidence should be based on a systematic and carefully planned series of experiments.

FROM the *Agricultural News* we learn that the cultivation of new seedling sugar canes, as compared with the Bourbon and other varieties hitherto grown in British Guiana and elsewhere in the West Indies, shows considerable progress in recent years. From returns to hand, it appears that 28,801 acres were planted in British Guiana in seedling canes in 1906–7. The area in 1905–6 was 14,743 acres, and in 1904–5 9518 acres. Among the more important seedling varieties are the Demerara seedlings D. 109 and D. 625, while two Barbados seedlings, B. 208 and B. 147, are also largely cultivated. It is pointed out that an editorial note which appeared in the *International Sugar Journal* in May last (pp. 219–220) discussing the "Identity of Seedling Canes in Demerara," and stating that the seedling cane B. 208 cultivated on the well-known Diamond Plantation in Demerara "was not the original seedling of that variety," is without foundation. Samples of B. 208 from Diamond Plantation have since been submitted to a critical examination by the Imperial Department of Agriculture for the West Indies, and it is stated that they are identical with the original seedlings of that variety raised at Barbados.

THE Engineering Standards Committee has issued a new edition of the British Standard Specification for Portland Cement (report No. 12, price 2s. 6d.). Several alterations have been made with the view of extending the usefulness of the specification. The percentage of sulphuric anhydride has been slightly extended, the expansion under the Le Chatelier test has been reduced, and the maximum final settling time for the slow-setting cement has been increased. Other alterations have been made in the direction of rendering the meaning of the specification more clear.

ONE of the most interesting phases of the development of copper mines caused by the recent great demand for the metal and by the use of electric power has been the profitable mining of ores so poor that formerly they would have been regarded as valueless. A striking example of this is afforded by the mines of the Boundary District, British Columbia, which are described in detail by Mr. F. Keffler in a copiously illustrated article in the *Engineering Review* (vol. xxxiii., No. 3). In the same issue there are well-considered articles on efficiency in the burning of fuel under the steam boiler, by Mr. W. D. Ennis, and on the design of modern producers and gas engines, by Mr. R. E. Mathot.

WITH the *Engineer* of June 21 is issued a special supplement devoted to auxiliary machinery on merchant steamers. It contains seventy illustrations, and shows in a striking manner the remarkable changes that have been effected within recent years. The development of electricity on board ship for power purposes, as well as for lighting; the adoption of the turbine principle of propulsion for cross-Channel and ocean-going passenger steamers; the increase in the number and size of dead-meat carrying steamers; and the radical modifications in the general design and equipment of ships engaged in bulk-cargo carrying, with the view of extreme despatch in loading and discharging—all these are matters which have had distinct influence of late in modifying conventional and standard facilities and practice in respect of steamship auxiliary machinery.

THE *Mitteilungen* of the Berne Philosophical Society for 1906 contain observations of twilight phenomena and of the intensity of the magnificent Alpine glows at that place during the year, by P. Gruner. The glows were more frequent than usual, owing probably to the abnormally fine weather, but the cases of great intensity of colour were below the average. In "The Glaciers of the Alps" Tyndall pointed out that "the colouring must, in a great measure, be due to some variable constituent of the atmosphere"; we are glad, therefore, to learn that the author proposes to discuss the observations published since 1903, after at least a five years' series is available.

THE Egyptian Survey Department has decided to separate the meteorological work into two parts, the first dealing with the observations at Helwan Observatory and the second with the climatological stations, rainfall, and river data. These observations have now been published for 1904, and the reports for 1905–6 are promised shortly. Part ii. contains, in addition to the results of observations at the various stations in Egypt and the Soudan, a sketch of the climate of Egypt condensed from the discussion in "Physiography of the River Nile and its Basin," by Captain H. G. Lyons (see NATURE, vol. lxxv., p. 17). The chief climatological feature of the year 1904 is said to have been the failure of the north-east African monsoon, which was both late and weak. In Egypt itself the noteworthy features were the abnormally cool weather of spring and warm spell in October.

DR. G. PANCONCELLI CALZIA, of Marburg, is publishing in the *Medizinisch-pädagogische Monatsschrift* a summary of current literature on phonetics under the title "Bibliographia Phonetica." As the author points out, it has been necessary for specialists in this subject to consult literature extending over a wide range of other sciences in order to find the papers they want, the only guide in existence being the somewhat incomplete summary of the period 1876–1896 by Breymann. Dr. Calzia desires to receive copies of all papers or books bearing on phonetics for the purpose of abstracting, and rare and valuable books will be returned if desired.

A VERY suggestive article on the progress of our knowledge of the flora of North America is contributed to the *Popular Science Monthly* for June by Prof. L. M. Underwood. It is illustrated by figures reproduced from the early works of Porta (1591), Bock (1587), Cornut (1635), Plukenet, Micheli (1729), and Linnæus (1753). Perhaps the most noteworthy point emphasised in the article is the comparatively recent development of botany as a subject of university study. The late Prof. Asa Gray appears to have maintained a conservative spirit in regard to the study of systematic botany, and to have shown opposition to those who might have helped in the vast field of work required to be done. Thirty years ago America possessed only three professors of botany, and one Government botanist at Washington; now, both in the universities and in the Government stations, the botanists can be counted by hundreds.

UNDER the title "Tablettes des Cotes," M. Gaston Tarry publishes a triple entry table for the purpose of finding the prime factors of large numbers which are not divisible by 2, 3, 5, or 7. For this purpose the number in question is first expressed in the form $m. 20580 \pm (q\, 2\cdot 10 + r)$. The tables headed with the numbers (Tablettes grillés) have slots cut in them which are placed over the columns headed with the columns $r$, and by following certain rules according to the sign in the above form, and noticing whether the figures ("cotes") in the subsequent lines of the columns are in dark or light type ("cotes grasses" or "cotes maigres"), it is possible to ascertain which of the prime numbers in the next adjoining column of the open tables are factors of the original number. We have verified the method, but the rules are a little difficult to apply at first. The tables are published by Gauthier-Villars, of Paris.

REFERRING to our note on the scientific uses of the kinematograph (NATURE, May 23, p. 87), Mr. W. F. Cooper, of Water Lane, Watford, writes pointing out the difficulties experienced by amateurs in obtaining sufficiently rapid films for the purposes of research. The fastest films he has been able to obtain have a speed of H. and D. 100, less than half that of ordinary snapshot plates. This speed is quite inadequate for the photography of operations, for in a case observed by Mr. Cooper an exposure of ten minutes would have been required. Mr. Cooper has been successful in recording the movements of blood corpuscle parasites, but the chief obstacle in the way of further progress is lack of general interest in the uses of the kinematograph on the part of scientific workers as opposed to professionals. He invites correspondence with others who have taken up this line of work with the view of producing a demand for films better suited to the purpose in the matter of speed and orthochromatic properties.

A SIMPLE lecture experiment to demonstrate the transformation of yellow phosphorus into the red variety is described by F. Zecchini in the *Gazzetta* (vol. xxxvii., i., p. 422). Ordinary dry phosphorus is melted in a glass tube 30 cm. long and 7–8 mm. in diameter by surrounding the tube with a bath of concentrated sulphuric acid the temperature of which is gradually raised to 180°. Sufficient phosphorus should be used to give about 10 c.c. of liquid. When the whole has melted, a minute crystal of iodine is added; as the crystal falls through the molten mass the immediate transformation of the latter into red phosphorus becomes clearly visible.

MESSRS. R. AND J. BECK, LTD., have published a pamphlet by Captain Owen Wheeler on "Telephotography Simplified for Naval, Military, and General Purposes." The price of the pamphlet is 1*s*. 3*d*.

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## OUR ASTRONOMICAL COLUMN.

COMET 1907*d* (DANIEL).—The daily ephemeris computed by Dr. E. Strömgren for comet 1907*d* is given up to July 10 in No. 4185 of the *Astronomische Nachrichten* (p. 155, June 21). The following is an extract therefrom:—

*Ephemeris 12h. (M.T. Berlin).*

| 1907 | α (true)<br>h. m. | δ (true)<br>° ′ | Brightness |
|---|---|---|---|
| July 4 | 1 4·3 | +5 0·0 | |
| „ 6 | 1 11·2 | +5 31·1 | 1·94 |
| „ 8 | 1 18·3 | +6 2·1 | |
| „ 10 | 1 25·5 | +6 32·9 | 2·17 |

An observation at Strassburg on June 17 gave corrections of +4s. and +0′·4, and the magnitude was estimated as 8·5 or 9·0. On that date the brightness, according to the ephemeris, was about 1·1. The apparent path as shown in the above ephemeris lies roughly between 80 and $\mu$ Piscium, and the comet now rises shortly after midnight.

PECULIAR SPECTRUM OF $\epsilon$ CAPRICORNI.—A note by Mr. V. M. Slipher, of the Lowell Observatory, on the spectrum of $\epsilon$ Capricorni (magnitude = 4·5) appears in No. 4, vol. xxv. (p. 285, May), of the *Astrophysical Journal*. Spectrograms taken last autumn showed bright lines, and more recent ones show that the hydrogen lines are paired—a dense dark line with a weak bright line above it. The dark hydrogen and the metallic lines indicate a radial velocity of about 45 kilometres for October 8, but on October 27 this had decreased to 35 kilometres, the lines being displaced towards the red. Broad and diffuse helium absorption lines are also shown, but do not participate in the displacement towards the red; in fact, measures of some of the sharper ones show a slight "shift" towards the violet, and it therefore seems possible that these, with the bright hydrogen lines, belong to one member of the system, whilst the dark hydrogen and the metallic lines belong to the second.

ATMOSPHERIC CURRENTS IN CELESTIAL BODIES.—A paper on the causes which produce different currents in the atmospheres of celestial bodies, such as Jupiter and Saturn, is published by Senor José Comas Solá in No. 4185 (p. 145, June 21) of the *Astronomische Nachrichten*. Senor Solá calls in the tide-raising effects of very small satellites revolving in close proximity to the primary to account for these atmospheric currents. Taking Jupiter as an example, these hypothetical satellites produce an accelerating effect in the superficial layers of the atmosphere near to the equator. The larger, more distant satellites produce a much deeper, retrograde current extending further from the equator, whilst in the circumpolar regions we see the normal rotation of the planet. Thus we get the shortest rotation period in the equatorial currents, and the slowest motion in the intermediate latitudes, where only the retrograding effect of the larger satellites is operating. This superposition of layers may account for the occasional passage of a mass of dark matter below the Red Spot, for, by the hypothesis, the latter, a superficial disturbance, is in the slower moving layer of the intermediate latitude, whilst the dark matter is a much deeper disturbance reaching down to the more quickly moving normal layer of the planet's atmosphere. Similarly, the proximity of rings of ponderable matter to Saturn and the sun may be held to account for the differential velocities observed in different zones of the atmospheres of those bodies.

OBSERVATIONS OF PLANETS.—In an account of the observations made on the summit of Mont Blanc during the period August 31 to September 5, 1906, MM. Hansky and Štefánik give details of their observations of Venus, Mercury, and Jupiter, made under nearly perfect atmospheric conditions. Difference in the markings seen near the poles of Venus and alterations in the contour of the terminator suggested a rotation of the planet, a suggestion which was apparently confirmed by the re-appearance of the same aspects after a lapse of nearly twenty-four hours. The two sets of observations made on September 3 and 4 gave the apparent rotation period as 23h. 20m. and 23h. 25m. respectively. Three dark spots, one at the middle of the terminator and two smaller ones near to the eastern limb of the planet, were seen on Mercury on September 5 at about 5h.

Numerous details of the observations of bands and spots on Jupiter are also given (*Comptes rendus*, No. 23, p. 1252, June 10).

THE MELBOURNE OBSERVATORY.—According to the report of the director, Mr. P. Baracchi, the astronomical work of the Melbourne Observatory for the period April 1, 1905, to November 30, 1906, was practically limited to meridian observations and the work for the Astrographic Catalogue. For the latter, the total number of satisfactory plates obtained was 19[illegible], of which ninety-three were triple-exposure chart plates and thirty-two were for the duplicate series of the catalogue; these bring the respective totals up to 588 and 487. The measuring bureau is the joint affair of the New South Wales and Victoria Governments, and the total numbers of plates measured to date are:—for Sydney, 551, containing 322,101 stars; for Melbourne, 836, containing 268,714 stars.